

In the present article it is impossible to go further into details. The apparatus as illustrated is rather crude and elementary, but I think enough has been said to justify the view that a good deal of useful work might be done by working with apparatus on these lines.

W. R. COOPER.

THE INTERNATIONAL UNION FOR COOPERATION IN SOLAR RESEARCH.

A CONFERENCE of the International Union for Cooperation in Solar Research will be held on September 27 at New College, Oxford, by invitation of the warden and fellows of the college. The following delegates of societies constituting the union have signified their intention of being present:—

From the United States, Profs. Hale and Campbell; from France, Messrs. Janssen, Deslandres, Fabry, Perot, and the Comte de la Baume Pluvinel; from Russia, M. Belopolski; from Germany, Prof. H. Kayser; from Holland, Prof. H. H. Julius; from Sweden, Prof. Knut Ångström; from Switzerland, Prof. A. Wolfer; from Austria, as representative of the International Association of Academies, Prof. Edmund Weiss. Great Britain will be represented by Profs. Turner, Schuster, and Fowler, Father Cortie, Mr. W. E. Wilson, Major Hills, Dr. W. J. S. Lockyer, and Dr. Halm. The subjects of discussion will include the following:—

The fixing of standards of wave-length in spectroscopic research, cooperation in the measurement of the intensity of solar radiation, cooperation in recording solar phenomena by means of photographs of the disc, spectroheliograph records and observations at the limb of the sun.

The foreign savants will be lodged at and entertained by New College. On Friday, September 29, the president of the Astronomical Society and Mrs. Maw will give a reception at their residence in London, and for the following day invitations to visit the observatories at Cambridge have been received from Sir Robert Ball and Mr. Newall. Prof. Schuster is acting as chairman of the executive committee which was appointed last year at the first conference of the union held at St. Louis.

NOTES.

THE meeting of the International Meteorological Conference at Innsbruck was opened on Saturday last, September 9, and the full sittings began on Monday. The following is a list of members attending the conference:—F. Åkerblom, Upsala; Rev. P. J. Algué, S.J., Manila; A. Angot, Paris; R. Assmann, Lindenbergl bei Breskow; A. Belar, Laibach; W. v. Bezold, Berlin; B. Brunhes, Puy de Dôme; V. Carlheim-Gyllensköld, Stockholm; V. Conrad, Vienna; P. M. Dechevrens, Jersey; E. Durand-Gréville, Mentone; Sir John Eliot, London; F. Erk, Munich; E. van Everdingen, de Bilt; G. Fineman, Stockholm; Rev. P. L. Froc, S.J., Zi-ka-wei; V. Gama, Tacubaya Obs., Mexico; G. Greim, Darmstadt; J. Hann, Vienna; G. Hellmann, Berlin; E. Hepites, Bukarest; H. Hergesell, Strassburg; H. H. Hildebrandsson, Upsala; W. Kesslitz, Pola; N. v. Konkoly, Budapest; W. Köppen, Hamburg; A. Lancaster, Uccle; W. Láska, Lemberg; E. Lauda, Vienna; J. Liznar, Vienna; Sir N. Lockyer, London; W. J. S. Lockyer, London; J. H. Lyons, Cairo; E. Mazelle, Trieste; H. Mohn, Christiania; A. Mohorovičić, Agram; L. Moore, Washington; M. Nedelkovitch, Belgrade; L. Palazzo, Rome; A. Paulsen, Copenhagen; J. M. Pernter, Vienna;

F. C. A. Pockels, Heidelberg; P. Polis, Aachen; G. B. Rizzo, Messina; A. L. Rotch, Boston; P. v. Rudzki, Cracow; M. Rykatchew, Petersburg; A. Schmidt, Potsdam; A. Schmidt, Stuttgart; P. Schreiber, Dresden; Ch. Schultheiss, Karlsruhe; Rev. P. Th. Schwarz, Kremsmünster; W. N. Shaw, London; A. Silvado, Rio de Janeiro; R. F. Stupart, Toronto; L. Teisserenc de Bort, Trappes; W. Trabert, Innsbruck; J. Valentin, Vienna; J. Violle, Paris. The members of the Solar Commission are:—M. Angot, Sir John Eliot, Prof. Hann, Sir N. Lockyer (president), Dr. Lockyer, Captain Lyons, Prof. Pernter, Prof. Rizzo, Dr. Rotch, Dr. Shaw, M. Teisserenc de Bort, Dr. Konkoly.

THE Carnegie Institution, Washington, sent Profs. F. Elster and H. Geitel and Herr F. Harms to Palma to make observations of the electric conditions of the atmosphere during the recent solar eclipse. By means of a self-registering electrometer, the variation of atmospheric electricity was photographically recorded, and a series of points of the same curve was taken simultaneously by eye-readings. The ionisation of the air was studied by a "Zerstreuungsapparat," and also by an "Ebert's Fön-counter." Besides these observations, exact measurements of the intensity of the solar radiation within the short wave-lengths were carried out, a peculiar kind of photometer having been prepared for this purpose. It is based upon the property possessed by clean surfaces of the alkaline metals of emitting kathode rays of a density proportional to the intensity of the incident light; by these rays the small residue of gas contained in a vacuum glass bulb is rendered conductive, and a circuit of a current is closed, the intensity of which may be read by means of a d'Arsonval galvanometer. In the apparatus alluded to the sensitive surface consisted of a thin layer of pure rubidium metal. An accuracy of $\frac{1}{2}$ per cent. to 1 per cent. was easily obtained. By a blue Jena glass rays of long wave-length are absorbed before reaching the rubidium surface, so only the blue and violet, and partially the ultra-violet, region of the spectrum remains, and these are the radiations which may be supposed to have an ionising effect on the atmospheric air. The results, as well as the description of the apparatus, will be published in the reports of the Carnegie Institution. Unfortunately the observations, like all others in Spain, suffered from the bad weather conditions. On the day of the eclipse rain fell during the morning; consequently it cannot be considered as undisturbed with regard to atmospheric electricity. The measurements of the solar radiation were possible in a continuous series only from the first contact to the end of totality; the decrease of illumination, therefore, was determined in a satisfactory manner and without any gaps. On the other hand, clouds prevented any reading being taken during the increase of light after totality.

THE photographs of the total solar eclipse, taken by the Solar Physics Observatory Expedition at Palma, have proved to be better than was expected from the state of the sky during totality. A fine picture of the corona was secured with the long-focus mirror, but the clouds were too dense for successful tri-colour photographs to be obtained.

THE visit of the members of the British Association to the Victoria Falls on September 12 was made the occasion of the formal opening of the bridge over the falls, by Prof. G. H. Darwin, president of the association. In declaring the bridge open, Reuter's Agency reports Prof. Darwin to have remarked that the great enterprise of the Cape to Cairo Railway, of which the bridge is a part, had

become possible by the influence of steam. He could not refrain from quoting the remarkable forecast written by his great grandfather, Erasmus Darwin, in 1785:—

Soon shall they arm unconquered steam afar,
Urge the slow barge and draw the flying car.

How little could the writer of these lines have foreseen that his great grandson would have the honour of declaring a railway bridge open in the heart of Equatorial Africa. Yet another interesting point was that this enterprise had rendered possible a purely scientific enterprise. He referred to the great survey of an arc of meridian which was due to the insight of Sir David Gill.

It is announced that the Emperor of Austria has made Dr. Karl Toldt, professor of anatomy in the University of Vienna, a life member of the Austrian House of Lords.

THE Harben lectures will be delivered in the lecture room of the Royal Institute of Public Health on October 10, 12, and 17 by Prof. T. Oliver. The subject of the lectures will be some of the maladies caused by the air breathed in the home, the factory, and the mine, including a description of caisson disease or compressed air illness.

A TELEGRAM to the *New York Sun* from Honolulu states that the steamship *Sierra*, which arrived at New York on September 6 from Australia, reports that a volcanic eruption has occurred on the island of Savaii, the largest of the Samoan group.

THE Arctic expedition of the Duc d'Orléans arrived at Ostend on September 12 on board the *Belgica*. M. de Gerlache, the commander of the expedition, said that the duke and himself were delighted with the results attained. They had been able to follow the pack ice the whole way from Spitsbergen to Greenland. The expedition has brought back a number of cases containing collections of scientific value.

WE regret to have to record the death of Mr. H. R. Noble, a past student in physics at University College, London. Mr. Noble had shown the possession of great experimental ability in connection with various investigations published by the Royal Society, especially by his work on the question of the relative movement of ether and matter. He had gained an 1851 scholarship, and had gone to Giessen to work under Dr. Drude when failing health compelled him to relinquish this work. Mr. Noble was very popular amongst his fellow-students and teachers at University College, and the news of his early death will be received with great regret.

It was stated recently by the *British Medical Journal* that a member of the Brazilian Chamber of Deputies had proposed that a prize of 400,000*l.* should be offered for the discovery of a certain method of stamping out consumption. It is now understood by our contemporary that the offer, which has been approved by the Brazilian Parliament, is larger in scope than was supposed, for it appears that the prize will be given to anyone, native or foreign, who shall discover a certain means of prevention or cure of syphilis, tuberculosis, or cancer. The Brazilian Minister of the Interior will, it is said, refer the proposal to a committee composed of a representative of the National Academy of Medicine, and four other members of kindred bodies in France, England, Germany, and Italy. The Brazilian Government will regulate the meetings of the committee.

THE Paris correspondent of the *Times* states that one of the most interesting features of the International Congress on Tuberculosis, to be held at the Grand Palais

on October 2-7, will be a museum and international exhibition of tuberculosis. The Paris Municipal Council has agreed to retain a considerable part of the scientific objects in the exhibition for a permanent free museum similar to that established by the Berlin Municipality at Charlottenburg. The opening meeting of the congress will be presided over by the President of the Republic, and attended by numerous French and foreign delegates, including leading men of science. The congress will be divided into four sections, that of medical pathology being presided over by Prof. Bouchard, that of surgical pathology by Prof. Lannelongue, that of the preservation and assistance of infant life by Prof. Grancher, while that of the preservation and assistance of adult life and social hygiene will be under the joint presidency of Prof. Landouzy and Senator Paul Strauss. The acting president and vice-presidents of the congress are Dr. Hérard, of the Academy of Medicine, and Profs. Chauveau and Brouardel, of the Institut de France. Dr. C. Theodore Williams and Dr. H. T. Bulstrode have been appointed by the Government the British delegates to the congress.

A SEVERE earthquake disturbed a large part of Italy and Sicily on September 8, causing much damage and the loss of hundreds of lives. The region most affected was in the vicinity of Monteleone, Calabria. The shock caused damage so far as Sant'Agata di Saro, Roggiano, and Gravigna (province of Cosenza) and Sicily in the south, and there was a sensible seismic movement in the north so far as the province of Palermo, Saserno, Basilicata, Puglia, Bari, and Lecce, and in the south over the whole eastern coast of Sicily. The following summary of Reuter's messages contains the essential facts relating to the disturbance:—*Reggio, Calabria, September 8.*—Very severe earthquake at 2.44 a.m. *September 9.*—Two undulating earthquake shocks of short duration felt at 2.8 p.m. *Catanzaro, Calabria, September 8.*—Violent shock of earthquake, lasting eighteen seconds, felt at 2.55 a.m. Several walls collapsed and cracks appeared in others. *Messina, September 8.*—Very severe shock occurred at 2.43 a.m., the direction of movement being from north to south. *Rome, September 8.*—Shock felt about 2.45 a.m., followed by other shocks during the day. Public clocks stopped. *September 9, 2 p.m.*—Slight shock registered by the instruments of the observatory at Rocca di Pappa. *Martirano.*—Many killed and injured. All the buildings collapsed. *Stefanaconi.*—Many houses destroyed, and about 100 people killed. *Piscopio.*—Every house in the village in ruins, and the dead number 50. *Monteleone.*—Many houses destroyed, and about 600 lives lost in the district. *Triparni.*—Totally destroyed, and 60 people killed. *San Gregorio.*—Sixty-five deaths. *Zammaro.*—Houses destroyed. *Zungri.*—Nearly every house wrecked, and many persons killed. *Cessaniti.*—Practically all the houses destroyed. *Bratico, Sanleo, St. Costantino, and Conidini* totally destroyed. *Catanzaro.*—All the villages in this province seriously damaged. Several entirely destroyed. About 450 killed and 1000 injured. *San Floro.*—Houses seriously damaged. *Daffina, Daffinillo, and Louzione, in the district of Tropea.*—Much damage done to houses. *Fesenza.*—Shock very severe, and extensive damage done. *Syracuse and Catania.*—Severe shocks felt. *Castellammare, Naples, and Florence.*—Slight shocks.

An article in the *Hong Kong Daily Press* by Mr. W. Kingsmill discusses the position of Ophir. He argues that the situation of Ophir and the provenance of the gold of Ophir are two distinct questions, holding with Prof. Keane that the latter came from South Africa the

ruined cities of which are engaging the attention of the British Association and, what is more to the purpose, of trained archaeologists. The original Ophir, on the other hand, Mr. Kingsmill locates at the head of the Persian Gulf, which was reached by Solomon's fleets; he makes his argument depend to some extent on a second argument to prove that the head of the gulf is the site of the Garden of Eden—a theory not improbable in itself, but apparently unconnected with the question of Ophir and the source of Solomon's treasure or of that of the earliest civilisations. Mr. Kingsmill has no evidence to show that the Jews connected the Garden of Eden with the head of the Persian Gulf, even if the myth originally referred to that area, and it is by no means clear why the Jews should associate gold with Ophir when they were, in Mr. Kingsmill's opinion, drawing their supplies of that metal from South Africa; for no evidence is produced to show that they drew gold from Mr. Kingsmill's Ophir at any time, or yet that the head of the Persian Gulf was known, much less proverbial in pre-Solomonic times as a source of gold. Mr. Kingsmill holds that Ophir, Sheba, Sofala, Havilah, &c., are one and the same, but it is scarcely sufficient to urge in proof of this that York appears twenty times in the *Times Atlas*. Needless to say, the article was written without knowing Mr. Randall MacIver's results recently described.

THE issue of the *Electrician* for September 1 contains a note by Lieut. Evans, R.E., upon some experiments made with different methods of earth connection for wireless telegraphic installations. The experiments were made with an oscillator consisting of a square copper wire capacity, 17 feet square, suspended horizontally by insulators, 14 feet above the ground. From the centre of this area, a vertical wire led to one knob of a spark gap, the other knob being connected by a similar wire to an iron-wire netting 17 feet square, suspended horizontally 2 feet above the ground, also on insulators. The current flowing in the vertical wire was measured under various conditions as regards the earthing of the iron-wire netting, and it was found that any connection of the transmitter or of the receiver with the earth was objectionable, since it greatly reduced the current flowing in the vertical wire. The most desirable form for the oscillator was, in fact, proved to be that approaching closely to a symmetrical Hertz oscillator as described by Sir Oliver Lodge in his Patent Specification, No. 11,575, of 1897. In this specification, two capacity areas, connected by self-induction coils and the receiving transformer, are clearly indicated.

As is customary, the issues of the *Lancet* and the *British Medical Journal* for September 2 are students' and educational numbers dealing with the curriculum necessary for the student of medicine, the various medical schools, books, the portals of entry into the profession, &c. The guardian of a prospective student could not do better than consult these periodicals.

THE issue of *Biologisches Centralblatt* for August 15 contains an article by Mr. A. Issakowitsch on the causes of sexual determination in water-fleas of the daphnid group, and a second by Prof. J. Lebedensky on the embryonic development of the echinoderm *Pedicellina echinata*.

FISHES from Borneo, principally from the Baram district of Sarawak, form the subject of a paper by H. W. Fowler in the July issue of the *Proceedings of the Philadelphia Academy*. Several are described as new, notably a shark belonging to the "tope" group, referred to the genus *Carcharinus* as *C. tephroides*.

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IN a recent issue of *Science* Mr. O. A. Peterson, of the Carnegie Museum, publishes a preliminary note on remains of a huge pig-like animal allied to *Entelodon* from the Loup-Fork beds of Nebraska, for which the name *Dinochoerus hollandi* is suggested. The chief grounds for generic separation of the new form appear to be the geological horizon and the immense proportions of the animal, of which the skull measures no less than thirty-five inches in length. It would be interesting to ascertain what relation this monster presents to the imperfectly known *Tetraconodon* of the Indian Siwaliks.

THE *Fortnightly Review* and the *Independent Review* for September each publish articles on the origin of life. In the former Mr. Burke gives an account of his experiments in which, by the action of radium on bouillon, microscopic bodies, termed "radiobes," appear. These seem to divide by fission, like a micro-organism, and not by cleavage, as obtains in a crystal. Mr. Burke concludes that the continuity of structure, assimilation, and growth, and then subdivision, together with the nucleated structure as shown in a few of the best specimens (of radiobes), suggests that they are entitled to be classed amongst living things, in the sense in which we use the words, whether we call them bacteria or not. In the *Independent Review* Dr. Charlton Bastian writes on the origin and development of living matter on the earth, and discusses his theories of archebiosis and heterogenesis. With regard to the former, the formation of living matter by a process of synthesis from its primitive elements, Dr. Bastian recognises the extreme difficulty of proving it, and suggests that when the results are negative in a "sterile" fluid this may be due to the degrading influence on the fluid of the heat employed for sterilisation. But "sterile" nutrient fluids, e.g. egg-white and blood-serum, may be obtained without the use of any treatment. As regards heterogenesis, the development of one form of living matter into another, e.g. amœbæ from a bacterial zoogloea, bacteriologists will not accept this until it has been proved that the germs of the species which is supposed to have developed were not present in the original zoogloea.

THE London County Council has issued an admirable little handbook (price 1d.) to the case in the Horniman Museum, Forest Hill, arranged as an introduction to the study of birds' eggs. It is illustrated by six reproductions from photographs of specimens in the case intended to show variation in colouring, protective coloration, the numbers in clutches of different species, size as compared to that of the parent, form, and grain of the shell. The first two plates require, of course, to be coloured in order to bring out the distinctive features of the specimens, but this would probably have involved too great expense.

IN the report of the Manchester Museum of Owens College for 1904-5, an appeal is made to the public for aid in preventing its work and expansion being crippled for want of funds. The most important event recorded during the year under review is the presentation by Mr. J. Haworth of his collection of Egyptian antiquities, which contains a large proportion of the specimens obtained by Prof. Flinders Petrie between the years 1888 and 1897. The museum has issued as one of its handbooks the second and third parts of Mr. H. Bolton's paper on the palæontology of the Lancashire Coal-measures, originally published in the *Transactions of the Manchester Geological and Mining Society* for 1904.

It is satisfactory to learn from *Science* that Trinity College, Connecticut, has made arrangements for establishing a floating laboratory of marine biology for the purposes

of explorations in oceanography, collecting specimens, and supplying teaching and scientific institutions with material for the study of marine organisms. A suitably fitted vessel of about 90 tons will be dispatched next summer for the Bahamas. In connection with this announcement, we may refer to a communication from Prof. M. E. Henriksen, of Ohio University, published in *Biologisches Centralblatt* of August 15, with reference to a proposal for the establishment of a biological station in Greenland, which, it is urged, would be sure to yield results of great scientific importance. "Back to nature" is the cry of the writer, who insists that biological progress now depends upon the observation of the relationship of organisms to their environment rather than on microscopic work in the laboratory.

EVER since the 'fifties, when the late Dr. H. Falconer wrote a note on the subject, strenuous efforts have been made to discover the origin of the so-called "bee-hole borings" which ruin the heart-wood of so much Burmese teak timber. Mr. E. P. Stebbing, who has been fortunate enough to discover the insect causing this serious damage, has recorded, albeit in a somewhat prolix manner, his investigations which led up to the discovery in a pamphlet published by the Calcutta Government Press under the title of "The 'Bee-hole' Borer of Teak in Burma." The offender turns out to be the larva of a large moth, which, after living for some time in the bark, when about to pupate bores large channels right into the heart-wood of saplings. As the sapling grows into a tree the borings remain in the heart, and thus completely ruin the timber for many purposes. Suggestions are made with regard to remedial measures.

THREE out of the four biological papers in the issue of the *Journal of the Straits Branch of the Royal Asiatic Society* for July are by H. N. Ridley, director of the Singapore Botanical Gardens, and relate to botanical subjects. In the first the author discusses the Gesneraceæ of the Malay Peninsula, and in the second the aroids of Borneo, while in the third he continues his descriptions of new and little known Malay plants. In the one zoological paper Mr. P. Cameron publishes a third contribution to our knowledge of the Hymenoptera of Sarawak. Among short notes, Mr. H. C. Robinson, of the Selangor Museum, records from the district where he is stationed that rare mammal the pen-tailed tree-shrew (*Ptilocercus lowei*), hitherto known only from Borneo.

THE flowering of bamboos, which a short time ago formed the subject of correspondence in NATURE, is discussed in a short article by Prof. F. A. Forel in the *Gazette de Lausanne* (August 1). In the spring a general flowering of the plants of *Bambusa gracilis*, a garden variety, took place at Morges, Canton Vaud, and flowering was observed at Nyon, Territet, Versoix, and Bex. The writer raises the questions whether the flowering is due to inherent causes or dependent upon climatic conditions, whether the seed produced is fertile, and whether all the plants die after flowering, and he requests that observations on these and similar points may be forwarded to him at the University of Lausanne.

We have received the tenth volume of Dr. Otto Baschin's "Bibliotheca Geographica," dealing with the year 1901. The volume shows no specially new features, a certain advantage in publications of the kind, and it maintains the fulness and accuracy of its predecessors.

In view of recent proposals to "utilise" Lake Titicaca, a paper on the basin of that lake, contributed by Mr. A. F. Bandelier to the August number of the Bulletin of

the American Geographical Society, is of more than usual interest. Mr. J. Russell Smith publishes a paper on the economic importance of the plateaux in tropic America in the same number, which also contains a well illustrated mountaineering paper on the Alaskan Range by Mr. Alfred H. Brooks.

AN elaborate memoir on the commercial significance of the Suez Canal, by the late Herr Martin Voss, appears in the *Abhandlungen* of the Vienna Geographical Society. Herr Voss's paper contains much statistical and other information in small compass, and should be extremely useful, especially if studied in relation to Ungard's work on the same subject, recently published in Vienna. Herr W. Schjerning contributes to the same publication a paper on the equidistant projections used in cartography.

A DESCRIPTION of a new apparatus for demonstrating the elementary principles of mathematical geography is given by Dr. Hermann v. Graber in *Petermann's Mitteilungen*. The fundamental idea is the application of the orthogonal projection to the ordinary wire model or "tellurium," hence the name "orthogonal-tellurium." Besides being available for teaching purposes, the instrument affords the means of making angular measurements with sufficient accuracy to be of use for rough work in the field.

THE scorification assay for gold telluride ores has long been believed to give low results by reason of volatilisation, and it is now seldom used for ores of that class, the assay by crucible being supposed to be more trustworthy. The results of a careful investigation of the subject by Mr. W. F. Hillebrand and Mr. E. T. Allen, published in Bulletin No. 253 of the United States Geological Survey, show that the doubts entertained as to the accuracy of the dry method are not well founded. There is no reason to question the substantial accuracy of the crucible method. Indeed, it is clearly established that the fire assay by crucible for gold telluride ores gives results which are quite equal to those obtained by the wet way, provided due corrections are made for slag and cupel losses. The gold loss in the slag is very small, but the cupel losses are considerable, the cupellation loss of gold by volatilisation being small as compared with that by absorption.

THE Cripple Creek gold deposits in Colorado were discovered in 1891, and up to 1904 yielded 124,415,022 dollars of gold and 646,193 ounces of silver. The district was surveyed for the United States Geological Survey in 1894 by Messrs. W. Cross and R. A. F. Penrose, and at the request and at the cost of the State of Colorado it has now been re-surveyed by Messrs. W. Lindgren and F. L. Ransome, and a summary of the facts of immediate importance has been published (Bulletin No. 254). There are some 300 mines in the district, and every accessible one was examined. The deepest shaft is the Lillie, which is more than 1500 feet deep; and the productive district is covered by the area of a circle $3\frac{1}{2}$ miles in diameter. An interesting feature of the ore-deposits is the occurrence of gas which in some cases issues in large volumes. Analysis shows it to consist of nitrogen, with about 20 per cent. of carbon dioxide and a small quantity of oxygen.

At the St. Louis Exhibition last year an investigation of the coals and lignites of the United States was carried out under the direction of the director of the United States Geological Survey, the sum of 6000l. having been voted by Congress for the purpose. Testing machinery was generously contributed by various manufacturers, and much valuable work was done with the plant, such an elaborate series of coal analyses having never before been made in

the United States. The preliminary report on the operations of the plant, drawn up by Messrs. E. W. Parker, J. A. Holmes, and M. R. Campbell, the committee in charge, has been issued as Bulletin No. 261 of the United States Geological Survey, and is of far-reaching importance in the solution of the fuel and power problems upon which the varied industries of the United States depend. Most of the American bituminous coals and lignites can, it was found, be used as a source of power in a gas-producing plant, the power efficiency of bituminous coals when thus used being $2\frac{1}{2}$ times greater than their efficiency when used in a steam-boiler plant. Some of the lignites from undeveloped but extensive deposits in North Dakota and Texas showed unexpectedly high power-producing qualities. It was found, too, that some of the American coals and the slack produced in mining them could be made into briquettes on a commercial basis.

THE weather over the British Islands has been very unsettled during most part of the last week, rainfall being very prevalent generally; in the south of England and all the western districts the amount was much above the average. Strong gales occurred in many places, especially on the western and southern coasts, and the sea has been very rough at times. The Meteorological Office reports on Tuesday showed a considerable improvement, with clear sky over most parts of the kingdom, but a renewal of unsettled weather was anticipated in the western and northern districts. The rainfall from January 1 is still below the average in most districts, the deficiency amounting to about four inches in the north-east of England, but in the north of Scotland and Ireland the fall is considerably above the average.

THE assistant director of the Meteorological Service of Canada (Mr. B. C. Webber) has prepared a very useful paper entitled "The Gales from the Great Lakes to the Maritime Provinces." The tables show the number of areas of low barometric pressure, and gales, with information regarding them, for each month of thirty-one years (1874-1904). The results are published primarily for the use of the forecast officials in the Dominion, but they are valuable for reference by other persons. On the average, November is the stormiest month on the Great Lakes, and January in the Maritime Provinces; December and February also give a high percentage of storms. The diminution in the number of gales in March and September is opposed to the old idea of the stormy character of the periods of the equinoxes. The author states that the figures afford ample ground for suspicion that towards the maximum of sun-spots there is a maximum of low pressure areas, and that at the sun-spot minimum there is a paucity of such areas. The work has, of course, been prepared under the direction of Mr. R. F. Stupart, the director of the service.

WE have received the *Jahrbücher* of the Austrian Central Office for Meteorology and Terrestrial Magnetism for the year 1903; the work consists of two large quarto volumes, containing (1) carefully prepared results of 400 stations, and (2) special discussions, including an important contribution by M. Margules on the energy of storms, being an elaborate mathematical analysis of that branch of the physics of the atmosphere; a discussion of much interest for weather prediction, by Dr. F. M. Exner, in connection with the behaviour of the weather during conditions of high atmospheric pressure to the north of the Alps, illustrated by a number of weather charts; also comprehensive researches relating to the formation and propagation of thunder and hail storms, by K. Prohaska. We have before

directed attention to the value of the observations made at the high-level stations in the Austrian system; thirty-two of them have an altitude of 1000 to 1500 metres, fifteen others from 1500 to 2500 metres, and the Sonnblick 3106 metres. Meteorologists are much indebted to Dr. Pernter, the able director of the service, for the publication *in extenso* of the hourly results at some of these mountain stations.

MR. WM. BUTLER, of 20 Crosby Road, Southport, whose "swingcam" camera stand was referred to in NATURE of May 25 (p. 89), has sent us a series of twelve small prints of photographs of the recent partial eclipse taken by his son, who is only fifteen years of age, with the use of the apparatus. The pictures are clear, and show several phases of the partial eclipse very distinctly.

A LIST of scientific papers published by the National Physical Laboratory, or communicated by members of the staff to scientific societies or institutions, or to the technical journals, has just been issued. During 1900 and 1904, thirty-three papers on work connected with the laboratory were prepared and published by members of the staff, and in addition eleven papers were published by members of the staff independently.

MESSRS. MACMILLAN AND CO., LTD., will publish shortly "The Chemistry of the Proteids," by Dr. Gustav Mann, of the physiological laboratory at Oxford. This book is based upon the second edition of Dr. Cohnheim's "Chemie der Eiweisskörper," and has been prepared with the author's sanction. Dr. Cohnheim's work, which in its second edition has been entirely re-modelled, is of special interest to professional chemists, both organic and inorganic, but particularly to biologists, including zoologists, physiologists, and pathologists; while among the special features of Dr. Mann's book are, that for the first time the chemical derivatives of albumins and proteids are so arranged as to give a clear idea of the evolution from simple into more complex compounds, and for the first time also a very full account of the synthetic work of Curtius and Fischer is given.

OUR ASTRONOMICAL COLUMN.

NOVA AQUILÆ No. 2.—Very little further news of Nova Aquilæ is yet to hand, but Circular No. 79 of the Kiel Centralstelle informs us that several visual observations of the star's magnitude and position have been made.

Prof. Max Wolf reports that, according to observations made at the Königstuhl Observatory on September 4, at gh. 30.0m. (Königstuhl M.T.), the magnitude was 9.3. The position was determined as R.A.=18h. 54m. 24s., dec.= $-4^{\circ} 39'$ (1855).

A telephone message to Kiel from Dr. P. Guthnick on September 6 gave the following positions:—

1855.	R.A.=18h. 54m. 25s.,	decl. = $-4^{\circ} 38' 8''$
1905.	" 18h. 57m. 4s.,	" $-4^{\circ} 34' 8''$

and stated that the magnitude on September 5 was about 10.2, whilst the star was of a yellowish colour. A star of magnitude 10.5 precedes the Nova by 10s., and is $0.7'$ north of it. As the present Nova is the second known to have appeared in the constellation Aquila, it will be designated, according to precedent, Nova Aquilæ No. 2. The first Nova Aquilæ was discovered in July, 1900, on one of the Draper memorial chart plates which had been taken on July 3, 1899, and exhibited the characteristic "Nova" bright-line spectrum. The object itself was recorded for the first time, as a seventh magnitude star, on a plate taken on April 21, 1899.

VARIATION OF A NEWLY DISCOVERED ASTEROID.—According to a telegram from the Kiel Centralstelle, Dr. Palisa has found that the minor planet 1905 QY, which was discovered by Prof. Max Wolf on August 23, is subject to a remarkable fluctuation of magnitude. When discovered,